PROCEEDINGS OF THE

ROYAL ENTOMOLOGICAL SOCIETY

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ORDINARY MEETING

WEDNESDAY, 4th OCTOBER, 1961, at 5.30 p.m. (Tea 5 p.m.)

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 5th July, 1961.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendation of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 24].
6. Admission of Fellows.
7. Exhibits.
8. Communications.

1. **Dr. N. Waloff**

(*Imperial College of Science and Technology*)

Some factors controlling a natural population of *Phytodecta olivacea* (Forster) (Coleoptera : Chrysomelidae)

[ABSTRACT]

A study of the changes in a population of *Phytodecta olivacea*, a Chrysomelid beetle living on broom, has been made for a period of five years.

The key factor in controlling the population was the action of a complex of predators, whose effect was enhanced by the changes in the habitat.

There was also a correlation between the total precipitation during development and the numbers of the resulting adults in the following year.

2. **Mr. M. J. Way**

(*Imperial College of Science and Technology*)

Dr. C. J. Banks

(*Rothamsted Experimental Station*)

Population studies on *Aphis fabae* Scopoli (Hemiptera : Aphididae)

[ABSTRACT]

Aphis fabae Scopoli is a good example of the many aphid species which form dense aggregates. Aggregation benefits very small populations but as numbers increase there are harmful effects which begin when the population density is still much below that which the plant can support.

It seems that the striking effects of other natural controlling factors may often depend on the initial limitations imposed by intraspecific competition.

NOTICES

The next meeting will be held on *Wednesday, 1st November*, 1961 :

(1) **Dr. P. T. Haskell.**—Locust survival at sea.

(2) **Dr. K. U. Clarke.**—Some responses of metabolism in insects to changes in environmental temperature.

Proceedings of the Ordinary Meeting held on 5th July, 1961

Professor G. C. Varley, President, in the Chair.

Present, 65 Fellows and 11 Visitors.

The President said he felt that Fellows present would wish to express their congratulations to Dr. B. P. Uvarov on the Knighthood conferred on him by Her Majesty in the Birthday Honours. This was received with acclamation.

The minutes of the Ordinary Meeting held on 7th June were confirmed and signed by the President.

The names of the following candidates for election were read for the first time: Professor Carlos Salvador Carbonell; Dr. Geoffrey Ebbage; Miss Barbara Agnes Hopkins; Dr. Arthur John Juniper; Mr. Syed Ghulam Shabbir Kermani, B.Sc.; Dr. Ronald Harry Wharton; and Miss Eleanor Mabel St. Aubyn White.

For the second time (taken as read): Dr. Derek William Fewkes; Mr. Donald Alister Griffiths; Mrs. Augusta Maheswari Ladduwahetty, B.Sc.; Mr. Henry John Berman Lowe; Dr. Margaret Cranston Parsons; and Mr. Robin Jeremy Wootton.

The President announced that the following had been elected Honorary Fellows of the Society:

Dr. G. Fraenkel, University of Illinois, Urbana, Illinois, U.S.A.

Lt.-Col. F. C. Fraser, M.D., I.M.S., 55 Glenferness Avenue, Bournemouth, Hants.

Dr. A. J. Nicholson, C.B.E., Council for Scientific and Industrial Research, Canberra, Australia.

Professor O. W. Richards, F.R.S., Department of Zoology, Imperial College, London, S.W.7.

The Secretary read the names of the following newly elected Fellows of the Society: Mrs. Margaret Taggart Armstrong, B.Sc., Ministry of Agriculture, Fisheries & Food, 29, Rodney Street, Liverpool; Dr. Hasan Giray, B.Sc., Ph.D., c/o Department of Entomology, British Museum (Natural History), Cromwell Road, London, S.W.7; and Mr. Robert John Orme, 171, Pasir Panjang Road, Singapore.

Thanks were voted to donors of gifts to the library since the last meeting.

Mr. D. G. H. Halstead, Professor R. E. Lewis and Dr. Hasan Giray signed the Obligation Book and were admitted Fellows of the Society.

The President extended a welcome to Mr. R. Kisimoto of the Japanese Society of Zoology and Applied Entomology, Tokyo.

The Hon. Miriam Rothschild, speaking also on behalf of Mr. David Jones and Mr. John Parsons, made a short communication on hydrocyanic acid liberated from the crushed bodies of *Zyganea* and *Procris*. Hydrocyanic acid is liberated from the crushed tissues of the Narrow-Bordered Five-Spot Burnet (*Zygaena lonicerae* (von Schev.)) and the Six-Spot Burnet (*Zyganea filipendulae* (L.)) at all stages of their development, *i.e.* egg, larva, pupa and imago. A rough estimate suggests that 20–150 micrograms of HCN is liberated from each crushed moth. The crushed tissues of the Cistus Forester (*Procris geryon* (Hueb.)) also liberate HCN. Other aposematic species tested, the Cinnabar (*Hypocrita jacobaeae* (L.)), the White Ermine (*Spilosoma lubricipeda* (L.)), the Garden Tiger (*Arctia caja* (L.)) and the Scarlet Tiger (*Panaxia dominula* (L.)) all proved negative. The methods used for detecting HCN were the sodium picrate and the copper acetate-benzidine acetate tests [*see* Feigl, F., *Spot tests in inorganic analysis*, 5th English edition, pp. 276 and 280]. No enzyme which converted cyanide into thiocyanate could be found in the Burnet larva, but such an enzyme was present in the pupating larvae of *Apanteles zygaenarum* Marshall, which were tested by using the method recommended by Sörbo [*Methods in enzymology*, **2** : 334] shortly after they had emerged from a caterpillar of *Zygaena*.

Dr. H. E. Hinton said that he did not know of any previous report of an insect liberating HCN. The tolerance to cyanide of the Burnet was most interesting. Work done in 1952 [Yust and Sheldon, *Ann. ent. Soc. Amer.* **45** : 220] on the cyanide resistant

strain of the California red scale suggests that resistance is due to the fact that the resistant strain depends less upon cytochrome oxidase than the sensitive strain. Earlier theories attributed resistance to the ability to close the spiracles more quickly and keep them shut for longer periods than the sensitive strain. It was difficult to imagine how an active insect like the Burnet, with presumably a high oxygen uptake, could exist without cytochrome oxidase. The cyanide-insensitive terminal oxidases and flavoprotein systems would seem to be much too slow for it.

Dr. Hinton commented on the fluid that appeared on the tip of the tarsi. He said that he had found that in this moth, as in other Lepidoptera, part of the epithelium of the apodeme of the pretarsal retractor was glandular. When the muscle contracted, the lumen was deformed and the secretion was forced on to the arolium.

Mr. R. G. Fennah gave a paper on some distribution patterns in Fulgoroidea, an abstract of which appeared on page 17.

In the discussion which followed, Dr. J. S. Edwards asked how host-specific the members of this group were, and to what extent their distribution could be correlated with that of the plants on which they lived. Mr. Fennah replied that there was no close link such as would be expected where an insect was obligately dependent on a particular plant genus or species. Such cases were known in Fulgoroidea at species level, but not in the higher categories from which his examples had been drawn. Fulgoroid species tended to be relatively polyphagous within a particular plant association : if the composition of the association were changed by the addition of new members, they seemed able to use at least some of the new arrivals as food plants. There was thus a broad relationship between certain taxa and vegetation type, but it was of only limited value in accounting for the distribution of these taxa.

Miss Rothschild, referring to the distribution of the Black Hairstreak (*Strymon pruni* (L.)) in this country, stated that while sloe was its host plant, it was, in fact, only trees that were obviously old that were actually selected as the the food plant. Mr. Fennah observed that an apparently comparable preference for older plant tissue was shown by some Coccidae, and it had been found that by artificially inducing senescence in plants that had previously been ignored it was possible to change their acceptability to the insects. In an experimental approach along similar lines it would be of interest to observe the response of the butterfly to young sloe trees in which precocious senescence had been induced.

Mr. R. W. Crosskey asked whether Fiji was invariably a stepping stone in the eastward dispersal of Fulgoroidea into the Pacific : in Diptera, Fiji had often been by-passed by forms which had reached Samoa. Mr. Fennah replied that he had not yet critically studied the Samoan fauna, and was unable to say whether similar by-passing of Fiji had occurred.

Mr. D. Leston, referring to the richer representation, in genera and species, of Kinnaridae in the New World than in the Old, asked whether it was justifiable to suggest that the source from which these genera had been most immediately derived lay nearer to the New World than to the Old. Mr. Fennah replied that no suggestions, on present evidence, could be more than tentative, and this was only one of several possibilities. The point which it was desired to bring out was that the distribution of Kinnaridae seemed to reflect a different history from that of the other Oriental-American taxa that had been mentioned.

Mr. G. H. Thompson introduced a colour film made by himself and Mr. R. Skinner on the life history of the Alder Woodwasp and its insect enemies.

In congratulating Mr. Thompson on the high quality of the film, Mr. M. E. Solomon suggested that it would be helpful if a list of all the species mentioned could be included in the Proceedings. [These were *Xiphidria camelus* (L.), *Rhyssella curvipes* (Grav.), *Pseudorhyssa alpestris* Holmgren, *Xiphidriophaga meyerinckii* Ratz.]

Mr. Thompson said, in reply to an enquiry by Miss Rothschild, that the apparatus used in making the film was a Bolex 16 mm. camera with 1 inch and 3 inch lenses. The biggest problems were, however, not connected with the apparatus but with light, vibration and maintaining a stable voltage.

Mr. C. N. Hawkins wondered how it was possible to avoid disturbing the insect when raising the bark to photograph the ovipositor at work. Mr. Thompson said it needed infinite patience and persistence and it was often necessary to wait a long time for a suitable opportunity to photograph.

PAUL FREEMAN, *Honorary Secretary.*

Additions to the Library

Presented

British Museum (Natural History). *A survey of the dragonflies (Order Odonata) of Eastern Africa*, by E. C. G. Pinhey. 8vo. London, 1961. [The Trustees, British Museum.]

Dryja, A. *Badania nad polimorfizmem krasnika zmiennego* (Zygaena ephialtes *L.*) [*Genetic investigations on the polymorphism of* Zygaena ephialtes *L.*] 8vo. Warszawa, 1959. [The Publishers.]

Fraser, F. C. *A handbook of the dragonflies of Australasia.* 8vo. Royal Zoological Society, New South Wales, 1960. [The Author.]

Haskell, P. T. *Insect sounds.* 8vo. London: H. F. & G. Witherby Ltd., 1961. [The Publishers.]

Smit, C. J. B. *The behaviour of the brown locust in its solitary phase.* 4to. Pretoria, 1960. [*Dep. Agric. Tech. Serv. Pretoria. Technical Communication* No. 1.] [The Publishers.]

Purchased

Auber, L. *Atlas des Coléoptères de France, Belgique, Suisse.* 2nd edition. Vols. 1 and 2. 8vo. Paris, 1960.

Cheesman, E. *Time well spent.* 8vo. London: Hutchinson, 1960.

Fischer, F. C. J. *Trichopterorum catalogus.* Vol. 1. *Necrotauliidae, Prosepididontidae, Rhyacophilidae.* 8vo. Amsterdam, 1960.

Haskell, G. *Practical heredity with* Drosophila. 8vo. London and Edinburgh: Oliver & Boyd, 1961.

Hemming, F. *Annotationes lepidopterologicae.* Parts 1 & 2. 8vo. London: Hepburn & Sons, Ltd., 1960.

Janse, A. J. T. *The moths of South Africa.* Vol. VI, Part 2. *Gelechiadae.* 8vo. Pretoria, 1960.

Klucze do oznaczania owadow Polski. 8vo. Warszawa, 1960. Czesc. XXVII. Motyle-Lepidoptera. Zeszyt. 46a. Miernikowce-Geometridae.

Mallis, A. *Handbook of pest control.* 3rd edition. 8vo. New York, 1960.

Die Neue Brehm-Bücherei. 8vo. Wittenberg.

242. *Hautflügler* III, by U. Sedlag, 1959.
245. *Unsere Laufkäfer*, by F. Scherney, 1959.
251. *Ohrwürmer und Tarsenspinner*, by M. Beier, 1959.
253. Gallmücken, by G. Fröhlich, 1960.

Ong, E. R. de. *Chemical and natural control of pests.* 8vo. London: Chapman & Hall, 1960.

Stichel, W. *Illustrierte Bestimmungstabellen der Wanzen.* II. *Europa* (*Hemiptera-Heteroptera Europae*) Vol. 4, Heft 21. 8vo. Berlin-Hermsdorf, 1961.

In addition separates have been presented by The Science Laboratories, Durham; Professor R. L. Edwards; Professor T. Jaczewski; Department of Scientific and Industrial Research, Auckland; Mrs. K. M. F. Scott; Massachusetts Institute of Technology Libraries; Companhia de Diamantes de Angola; Dr. R. O. Brinkhurst; Dr. P. D. Gupta; Professor C. M. Biezanko; Dr. L. G. Higgins; Mr. J. E. H. Blackie; Hope Department of Entomology, Oxford; Forest Products Research Laboratory, Princes Risborough; Dr. T. T. Macan; Division of Entomology, Pretoria; Commonwealth Institute of Entomology; Dr. F. S. Truxal.

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